

1/2 018 UNCLASSIFIED PROCESSING DATE--04DEC70  
TITLE--ALTERATION OF NATURAL TITANOMAGNETITE AT HIGH PRESSURES AND  
TEMPERATURES -U-  
AUTHOR--(04)-BAGINA, O.L., KARPOVA, O.V., LIYSHITS, L.O., PETROVA, G.N.  
COUNTRY OF INFO--USSR  
SOURCE--IZV. AKAD. NAUK SSSR, FIZ. ZEMLI 1970, (2), 103-7  
DATE PUBLISHED-----70

SUBJECT AREAS--PHYSICS, EARTH SCIENCES AND OCEANOGRAPHY

TOPIC TAGS--IRON ORE, CURIE POINT, THERMAL EFFECT, SOLID SOLUTION,  
TITANIUM COMPOUND, ARSENIC MINERAL, COPPER COMPOUND, MAGNETIZATION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRA--3007/1244

STEP NO--UR/0387/70/000/002/0103/0107

CIRC ACCESSION NO--AP0136655

UNCLASSIFIED

2/2 018

UNCLASSIFIED

PROCESSING DATE--04DEC70

CIRC ACCESSION NO--AP0136655

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. NATURAL OLIVINITE ASSOC. WITH  
TITANOMAGNETITE WAS HEATED AT VARIOUS TEMPS. UP TO 1000DEGREES IN CLOSED  
AMPULS IN A NEUTRAL OR A SLIGHTLY REDUCING ENVIRONMENT. THE CURIE  
POINTS ARE GIVEN TOGETHER WITH THE FRACTION OF SOLID SOLNS. IN THE  
RESULTING PRODUCTS. THE SPECIFIC MAGNETIZATION DEPENDED ON THE AMT. OF  
MAGNETITE PRESENT IN THE SOLID SOLNS. FACILITY: INST. FIZ.  
ZEMLI, MOSCOW, USSR.

UNCLASSIFIED

USSR

UDC: 669.715:620.17

LIVSHITS, L. N.

"Mechanical Properties of Certain Aluminum Alloys at High Temperatures"

Sb. Nauch. Tr. Chelyabinsk. Politekhn. In-ta [Collected Scientific Works of Chelyabinsk Polytechnical Institute], 1972, No 100, pp 18-20 (Translated from Referativnyy Zhurnal Metallurgiya, No 8, 1973, Abstract No 8I691, by A. Babayeva).

Translation: Tests at 20, 100, 200, 300, 400 and 500° are conducted with cylindrical specimens of the alloys AV-T1, V92-T, AD1-N, cut along the direction of rolling. A sharp drop in  $\sigma_{0.2}$  of Al alloys begins at 200°, this critical temperature, called the first critical temperature, being common for thermally hardened and nonhardened alloys. The second critical temperature, at which  $\sigma_{0.2}$  is equal to 0, falls in the temperature interval between 400 and 500° for all Al alloys. Graphs of the dependence of  $\sigma_v$ ,  $\delta$  and  $\psi$  on temperature are presented for these alloys. 3 figures.

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USSR

UDC 621.791.011.08:621.642.669.14

LIVSHITS, L. S., Doctor of Technical Sciences, RAKHMANOV, A. S., Candidate of Technical Sciences, and ROZHDESTVENSKIY, V. V., Candidate of Technical Sciences, All-Union Scientific Research Institute of Main Pipeline Construction

"Brittle-Rupture Stability of Welded Vessels Operating Under Pressure"

Moscow, Svarochnoye Proizvodstvo, No 10, Oct 70, pp 12-13

Abstract: The quantity  $a_p$  (kg/cm<sup>2</sup>) of steel, the energy index of resistance to development of brittle rupture, is suggested as a basis for a calculation method for determination of conditions controlling the stability of welded vessels operating under pressure to brittle rupture. The method is based on the correspondence of the potential energy of elastic deformation of the walls of the vessel to the energy index of the resistance of steel to development of rupture.

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LIVSHITS, L.S.

AA0039845

UR 0482

Soviet Inventions Illustrated, Section I Chemical, Derwent, -

3/70

237722 BIOCHEMICAL TESTING OF WASTE WATER is more reliable and more accurate. Vessel 1 is connected to the compensating bottles 2 and 3 through an electrolyser 4 and a pressure regulator 5. The regulator is connected with a level indicator 6, an amplifier 7, a relay 8 and a recorder 9. 1 litre of waste water (sample) with active sludge is placed in the vessel. A container 10 with 30% solution of KOH is placed to absorb carbon dioxide. Oxidising of organic matters accompanies the demand for diluted oxygen and subsequent diffusion of it from gas 11 to a liquid. The pressure of gas increases due to the fact that

AUTHORS: Arendt, G. A.; Veprintsev, V. I.; Kalyagin, A. M.;  
Krikun, V. Ya.; Livshits, L. S.; Marchenko, I. A.;  
Morgulis, L. A. and Sokolov, G. I.

19741229

AA0039845

electrolyser 4 produces oxygen by the electrolysis of an anode A. When it is equal to the pressure in the bottles 2 and 3, the electrolyser is automatically cut-off. The current to the electrolyser is regulated by a resistance R and the duration of the cycle is controlled by a timer 12. Hydrogen from cathode R is absorbed in 13. Mixing of sample is done magnetically 14 and the complete assembly is submerged in a thermostatically controlled water bath 15. 17.4.67. as 1149716/13-26. A.A KUZMIN et alia Water Supply Canalisation. Hydrotechnical Plate and Hydrogeological Eng. Res. Inst. (7.7 69.) Bul. 8/12.2.69. Class 8bb. Int.C1. C02b.

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Spetsial'noye Konstruktorskoye Byuro "Gaztrovmashina"

19741230

USSR

UDC 669.018.25

GRINBERG, N. A., KURKUMELLI, E. G., and LIVSHITS, I. S., All-Union Scientific Research Institute of the Construction of ~~Main~~ Pipelines

"Effect of Austenite on the Properties of Some Wear-Resistant Alloys"

Moscow, Metallovedeniye i Termicheskaya Obrabotka Metallov, No 11, Nov 70, pp 66-67

Abstract: It is shown that the amount of austenite in wear-resistant alloys affects their properties. The nature of the effect depends on the structural composition of the alloys and the quantity of solid phases. With the content of solid phases up to 25%, an increase in the amount of austenite results in an increase of the impact resistance of alloys. The wear resistance is reduced insignificantly when the amount of austenite does not exceed 40-47%. At solid phase contents above 33%, an increase in the amount of austenite is incapable of increasing the impact resistance of the alloy. However in the given case, an increase in the content of austenite increases the wear resistance as a result of stronger fixing of solid particles in the alloy. Thus the highest wear resistance is attained at 15-18% austenite (3-3.5 Ni). Introduction of larger quantities of nickel is not feasible since an increase in the amount of austenite above the cited levels does not raise the wear resistance.

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USSR

UDC: 519.2

LIVSHITS, L. Z., OSTROVSKIY, I. V.

"On Multidimensional Infinitely Divisible Laws Having Only Infinitely Divisible Components"

V sb. Mat. fiz. i funkts. analiz (Mathematical Physics and Functional Analysis--collection of works), vyp. 2, 1971, pp 61-75 (from RZh-Kibernetika, No 4, Apr 72, Abstract No 4V10)

Translation: It is proved that the class of n-dimensional infinitely divisible laws having only infinitely divisible components is dense in the sense of weak convergence in the class of all n-dimensional infinitely divisible laws. Authors' abstract.

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USSR

LIVSHITS, L. Z.

UDC 519.21

"Sufficient Conditions Under Which a Two-Dimensional, Infinitely Divisible Law Has Only Infinitely Divisible Components"

Teoriya funktsiy, funkts. analiz i ikh prilozh. Resp nauch. sb. (Theory of Functions, Functional Analysis, and Their Applications: Republican Scientific Collection), No 12, 1970; pp 36-59 (from Referativnyy Zhurnal - Matematika, No 8, Aug 71, Abstract No 8V10 by I. Ostrovskiy)

Translation: In studying the structure of the class  $I_0$  of infinitely divisible (i. d.) laws that have only i. d. components, a key role is played by sets of the type

$$\{(\mu_m)_{m=-\infty}^{\infty} \mid \bigcup_{m=-\infty}^{\infty} (\mu_m)_{m=-\infty}^{\infty}\} \quad (1)$$

where  $\mu_{m1} > 0$ ,  $\mu_{m2} < 0$ , and the numbers  $\mu_{m+1,r} / \mu_{mr}$  are natural numbers distinct from unity ( $m = 0, \pm 1, \pm 2, \dots$ ;  $r = 1, 2$ ). The sets were introduced by Yu. V. Linnik, who showed (Referativnyy Zhurnal - Matematika, 1963, Abstract 7V110 K) that is a one-dimensional i. d. law with a Gaussian component belongs to  $I_0$ , then its spectral Levy measure is continuous.

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LIVSHITS, I. Z., Teoriya funktsiy, funkts. analiz i ikh prilozh. Resp nauch. sb., No 12, 1970, pp 36-59

centrated on a set of form (1). On the other hand, if the spectral Levy measure is concentrated on a set of the form (1) and diminishes rapidly enough at infinity, then the law belongs to class  $I_0$ .

This paper considers two-dimensional i. d. laws whose spectral Levy measure is concentrated on subsets of the Cartesian products  $A \times B$ , where A and B are one-dimensional sets of the form (1). It is shown that under certain conditions of a geometrical nature imposed on the subsets, a sufficiently rapid decrease at infinity of a spectral Levy measure entails the membership of the i. d. law in the class  $O_0$ .

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1/2 024 UNCLASSIFIED PROCESSING DATE--09OCT70  
TITLE--NONLINEAR PERTURBATION OF PLASMA OSCILLATION UNDER CONDITIONS OF AN  
ELECTRON CYCLOTRONIC RESONANCE -U-  
AUTHOR-(02)-KIVSHITS, M.A., TSVTOVICH, V.N.  
COUNTRY OF INFO--USSR  
SOURCE--ZHURNAL TEKHNICHESKOI FIZIKI, VOL. 40, JAN. 1970, P. 18-31  
DATE PUBLISHED--70  
SUBJECT AREAS--PHYSICS  
TOPIC TAGS--PLASMA OSCILLATION, CYCLOTRON RESONANCE, NONLINEAR EFFECT,  
PLASMA HEATING, STRONG MAGNETIC FIELD  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAME--1978/1505 STEP NO--UR/0057/70/040/000/0018/0031  
CIRC ACCESSION NO--AP0046344  
UNCLASSIFIED

2/2 024

UNCLASSIFIED

PROCESSING DATE--09OCT70

CIRC ACCESSION NO--AP0046344

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. EXAMINATION OF A NONLINEAR INTERACTION BETWEEN THE PLASMA AND THE HIGH FREQUENCY FIELDS WITH FREQUENCIES CLOSE TO THE ELECTRON GYROFREQUENCY. A STUDY IS MADE OF THE EFFECT OF A KINETIC NONLINEAR GENERATION OF OSCILLATIONS IN A PLASMA SUBJECTED TO A STRONG MAGNETIC FIELD. AN EVALUATION IS MADE OF THE PROBLEMS CONCERNING THE NONLINEAR THEORY OF A CYCLOTRONIC PLASMA HEATING. FACILITY: AKADEMIIA NAUK SSSR, FIZICHESKII INSTITUT, MOSCOW, USSR.

UNCLASSIFIED

USSR

UDC: 681.332.65

LIVSHITS, M. G.

"A High-Speed Counter for Pulses of Arbitrary Shape"

Vestn. Belorus. un-ta (Belorussian University Herald), 1971, series 1, No 2, pp 85-87 (from RZh-Avtomatika, Telemekhanika i Vychislitel'naya Tekhnika, No 10, Oct 71, Abstract No 10B224)

Translation: The paper describes a high-speed counter based on tunnel diodes and transistors which is actuated by pulses of arbitrary shape and duration with an amplitude exceeding the threshold. The maximum count rate in the binary mode is 160 MHz. Counting modes with feedback present were studied. The counter operates reliably in the decimal mode at a rate of 60 MHz. Two illustrations. Resumé.

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1/2 028 UNCLASSIFIED PROCESSING DATE--16OCT70  
TITLE--CURRENT CONDUCTING DISCHARGE CHANNEL NEAR THE SURFACE OF ELECTRODES  
STUDIED WITH AN ELECTRON OPTICAL CONVERTER -U-  
AUTHOR-(02)-MARTINKOV, YE.G., LIVSHITS, M.G.

COUNTRY OF INFO--USSR

SOURCE--ZH. PRIKL. SPEKTROSK. 1970, 12(1), 131-2

DATE PUBLISHED-----70

SUBJECT AREAS--ELECTRONICS AND ELECTRICAL ENGR.

TOPIC TAGS--ELECTRODE PROPERTY, SPECTRAL LINE, IMAGE CONVERTER, BATTERY  
ELECTRODE, CURRENT DENSITY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAE--1995/0433

STEP NO--UR/0368/70/012/001/0131/0132

CIRC ACCESSION NO--AP0116099

UNCLASSIFIED

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PROCESSING DATE--16OCT70

2/2 028

CIRC ACCESSION NO--AP0116099  
ABSTRACT/EXTRACT--(U) GP-0-

ABSTRACT. THE EMISSION OF THE SPECTRAL LINES WITH HIGH ENERGY OF EXCITATION OF A CURRENT CONDUCTING DISCHARGE CHANNEL WAS STUDIED AT 40,000 DEGREES K. THE DISCHARGE OF A CAPACITOR BATTERY WITH CAPACITANCE SMALLER THAN OR EQUAL TO MU F AND WITH 5 KV WAS FOLLOWED. THE MAX. INDUCTION OF THE DISCHARGE CONTOUR WAS 20 MU H. THE TIME SPACE DISTRIBUTION OF THE SPECTRAL LINES AL III LAMBOA EQUALS 4529, 4512, AND 4480 ANGSTROM WAS MEASURED NEAR THE CATHODE SURFACE. IN THE STARTING STATE (MAX. CURRENT 12,000 A), SEVERAL CHANNELS WERE OBSD. NO PULSATION NEAR THE SURFACE OF THE ANODE WAS SHOWN. NO PULSATION SHORTER THAN 10 PRIME NEGATIVE 7 SEC WAS OBSD. NEAR THE SURFACE OF THE CATHODE, THOUGH THE EXPTS. SHOWED THE PRESENCE OF SEVERAL CHANNELS WITH PULSATION TIMES OF SOME MU SEC. THIS EFFECT WAS ATTRIBUTED TO THE MIGRATION OF THE CHANNELS NEAR THE CATHODE. AT THE MAX. CURRENT DISCHARGE, THE EMISSION OCCUPIED THE TOTAL SURFACE OF THE ELECTRODE, AND SEP. CHANNELS WERE OBSD. IN THE FINAL STATE OF THE DISCHARGE, 2 CHANNELS WERE OBSD., THE EMISSION INTENSITY OF WHICH PULSATED AT 10 PRIME NEGATIVE 7 AND 10 PRIME NEGATIVE 6 SEC.

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Acc. Nr: **AP0047194** **LIVSHITS** Ref. Code: **UR0511**

PRIMARY SOURCE: **Stomatologiya**, 1970, Vol 49, No 7, pp 78-79

*I. I. Stovokhotnova, M. I. Livshits* — THE INFLUENCE OF ATROPINE AND  
PILOCARPINE ON THE DEVELOPMENT OF DENTAL EXPERIMENTAL CARIES  
IN RATS

S u m m a r y. During 55-day-long experiments on albino rats receiving a cariogenic diet the authors studied the influence of hypo- and hypersalivation on the development of dental caries. It was established that atropine, causing hyposalivation, accelerates the development on dental caries, whereas pilocarpine, causing hypersalivation, manifests a tendency to retention of the development of dental caries.

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1/2 009 UNCLASSIFIED PROCESSING DATE--13NOV70  
TITLE--THERAPEUTIC EMPLOYMENT OF GZDCRITIS AT THE TRUSKAVETS HEALTH  
RESORT -U-  
AUTHOR--LIVSHITS, M.L.  
COUNTRY OF INFO--USSR  
SOURCE--VRACHEBNYE DELO, 1970, NR 5, PP 129-130.  
DATE PUBLISHED-----70  
SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES  
TOPIC TAGS--WAX, THERAPEUTICS  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAE--3001/1173 STEP NO--UR/0475/70/000/005/0129/0130  
CIRC ACCESSION NO--AP0126775  
UNCLASSIFIED

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PROCESSING DATE--13NOV70

CIRC ACCESSION NO--AP0120775

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE AUTHOR DISCUSSES THE MECHANISM OF THERAPEUTIC ACTION OF OZOCERITIS AND SUGGEST THE NECESSITY OF FURTHER DETAILED STUDIES OF THESE MECHANISM IN A SPECIAL LABORATORY. MODERN TECHNIQUES OF EMPLOYMENT OF OZOCERITIS IN HEALTH RESORT CONDITIONS ARE RECOMMENDED.

UNCLASSIFIED

USSR

UDC 519.281

LIYSHITS, M. Ye., ROMM, B. I.

"Solution of the Inverse Problem from the Theory of Errors, Based on the Principle of Unequal Influences"

Metody Predstavleniya i Apparatur. Analiz Sluchayn. Protsessov i Poley. 3-y Vses. Simpozium. Sekts. 1 [Methods of Representation and Hardware Analysis of Random Processes and Fields, Third All-Union Symposium, Section 1 -- Collection of Works], Leningrad, 1970, pp 63-70, (Translated from Referativnyy Zhurnal, Kibernetika, No 6, 1971, Abstract No 6 V143 by V. Noskov).

Translation: The function of many variables  $y = f(x_1, x_2, \dots, x_m)$  is determined on the basis of results of measurements of  $x_i$ . A limiting absolute error  $\Delta y_3$  and set of limiting absolute errors  $\Delta x_{ij}$  ( $i = 1, 2, \dots, m; j = 1, 2, \dots, q$ ) are fixed. On the assumption of linearity  $\Delta y = \sum_{i=1}^m f_i \Delta x_{ij}$ , where  $f_i = \left| \frac{dy}{dx_i} \right|$ , the

problem of finding the set of first errors  $\Delta x_{ij}$  satisfying the condition  $\sum_{i=1}^m B_{ij}$  where  $\sum_{i=1}^m f_i \Delta x_{ij} \leq \Delta y_3$  is found. When strict inequality is possible, the

"quasioptimal" solution is sought considering the weight coefficient  $B_{ij}$ , reflecting the technical and economic indicators of the measuring and calculating equipment. An iteration algorithm for search for the solution is suggested, minimizing

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UDC 519.281

LIVSHITS, M. Ye., ROMM, B. I., Metody Predstavleniya i Apparatur. Analiz Sluchayn. Protsessov i Poley. 3-y Vses. Simpozium. Sekts. 1, Leningrad, 1970, pp 63-70.

the sum  $\sum_{i=1}^m B_{ij}$  where  $\sum_{i=1}^m f_i \Delta x_{ij} < \Delta y_3$ .

UDC 547.91.7

USSR

LIVSHITS, N. D., KADYROV, Ch. Sh., and KEFELI, V. I., "Order of the Red Banner of Labor" Institute of the Chemistry of Plant Materials, Academy of Sciences of the Uzbek SSR; Institute of Plant Physiology imeni Timiryazev

"Synthesis and Biological Activity of RS-Abscissic Acid and Its Analogs"

Tashkent, Khimiya Prirodnikh Soyedineniy, No 6, 1970, pp 731-735

Abstract: A three-stage method is used for synthesizing abscissic acid giving a 24% yield of intermediate 1-hydroxy-4-keto- $\alpha$ -ionone. The purity of the ketone was checked by the method of thin-layer chromatography. Condensation of 1-hydroxy-4-keto- $\alpha$ -ionone with carboethoxymethylene triphenylphosphoran yields a mixture of isomers of (+) cis-trans and (+) trans-trans-abscissic acid esters. The precipitated triphenylphosphonium oxide was separated from the mixture of abscissic acid ester isomers. The acid ester mixture was then washed in the column without removing the triphenylphosphonium oxide. When the residue was treated with a mixture of ether and petroleum ether, abscissic acid was isolated with a yield of 34%. A possible biosynthetic predecessor of RS-abscissic acid -- ethyl ether of  $\beta$ -ionolylene acetate -- was synthesized by reacting  $\beta$ -ionone with carboethoxymethyl phosphonic acid. The reaction was

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LIVSHITS, N. D., et al, Khimiya Prirodnikh Soyedineniy, No 6, 1970, pp 731-735

done with sodium and lithium hydrides in a nitrogen atmosphere in dimethylformamide. Ethyl ether of  $\beta$ -ionolydene acetate was also synthesized by reacting  $\beta$ -ionone with ethyl bromoacetate. In this reaction, ethyl ether of retro- $\beta$ -ionolydene acetate is produced in addition to the main product. The authors studied the effect of various factors on condensation of  $\beta$ -ionone with ethyl bromoacetate: duration of the reaction, the nature of the catalyst (zinc powder, zinc amalgam) and its quantity, and also the presence of impurities which affect product yield. Other possible predecessors of RS-abscisic acid -- ethyl ether of dehydro- $\beta$ -ionolydene acetate and dehydro- $\beta$ -ionone -- were synthesized by N-Br-succinimide allyl bromination of ethyl ether of  $\beta$ -ionolydene acetate and  $\beta$ -ionone respectively. The best yield of products for dehydro- $\beta$ -ionone (50%) was achieved by carrying out the reaction in carbon tetrachloride (treatment by diethyl aniline and pyridine, 3:1), while the best yield for dehydro- $\beta$ -ionolydene acetate (57%) was achieved by carrying out the reaction in methylene chloride (quinoline treatment). It was found that the predecessors of RS-abscisic acid suppress the growth of coleoptile segments to a much lesser extent than the acid itself.

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LIVSHITS, D.D.

Quick Method for  
Determining the Presence  
of SORIN in Food Products

J-805

103

CHI 615,9/6/22

Detected

A QUICK METHOD FOR DETERMINING THE PRESENCE OF SORIN  
IN FOOD PRODUCTS

A. E. Koshcheyev, D. D. Livshits

S. S. Kuznetsov, Moscow  
1973

Among various insecticides being used at the present time in agriculture and horticulture work, a product named sorin, first synthesized in 1932, is proving especially popular. (Czechoslovakia, Germany, France, Belgium, Italy, Sweden, Canada, Pakistan and India). In terms of its chemical structure, it is an organophosphorus compound. Alpha-naphthyl is the starting base product.

For use in agriculture, sorin is produced in the form of a substance powder, containing from 30 to 50 percent of the active substance, or in a spray — containing from 1.5 to 10 percent of the active substance. Sorin can be used for more than 50 different types of cultures. (V. S. Vukov, 1966).

In terms of its action upon the insects, the preparation belongs to insecticides of the contact, intestinal and irritant type. It is a stable product in the presence of ultraviolet irradiation and high temperatures, which ensures a long preservation of its toxicity under the natural conditions to which vegetables are exposed. For this reason, there is a prevailing need, while investigating food products, to check them for the presence of sorin. It is especially desirable to have a generally accessible and quick method for a qualitative determination of the presence of poisonous elements, which will permit systematic control over their proper use and reliable laboratory on the basis as well as in clinical establishments — of the additional toxic test.

This would make it possible to refer to laboratories only those products where a qualitative test has already established the presence of poisonous elements.

At the present time, the chromatographic method is used to make a qualitative determination of the presence of sorin in vegetable food products (L. H. Pukhachenko, 1962; L. H. Buzdolova, 1963). To determine sorin's presence on the surface of fruits or leaves, we have developed a relatively simple and easily carried out process, involving the use of luminance. With a cotton swab, soaked in a 0.1% solution of caustic soda in 50-percent ethyl alcohol, we scrub the surface of the object being examined, after which the swab is placed in a dark spot and exposed to the action of ultraviolet rays. As a source of this irradiation we use the portable device ULD-41 and a pocket flashlight with its own source of the "C" type. In the presence of sorin, the swab will assume a greenish-yellow glow, whereas if the poisonous chemical is absent, the glow will be dark-violet in color. The presence of any luminance on the surface of the fruit and leaves has no effect on the quality of the reaction. The entire investigation takes from 3 to 5 minutes.

At the same time, we processed both dry fruit and fresh apples with a solution of sorin, under laboratory conditions. After drying them, at room temperature, for a period of from 12 to 16 hours, we took a

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UDC 615.9/613.2

KOSHCHAYEV, A. K., and LIVSHITS, O. D.

"A Rapid Method for Determining Sevin in Food Products"

Moscow, Voenno-Meditsinskiy Zhurnal, No 11, 1970, pp 70-71

**Abstract:** A quick, convenient, sensitive, and inexpensive method is suggested for detecting sevin on fruits and leaves. The object to be investigated is rubbed with a cotton-tipped stick moistened with 0.1 N sodium hydroxide solution in 50% ethyl alcohol. The stick is then put in a dark place and exposed to ultraviolet radiation. If sevin is present, the stick luminesces a greenish-blue color; if the pesticide is absent, the luminescence is dark violet. The existence of a pollutant on the surface of fruits or leaves does not have any effect on the quality of the reaction. The entire procedure takes only 3 to 5 minutes.

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USSR

UDC 632.95.026:543

KOSHCHHEYEV, A. K., LYSHITS, O. D.

"Quick Method of Analyzing Sevin in Plant Products"

Moscow, Khimiya v Sel'skom Khozyaystve, No 1, 1972, p 29

Abstract: A highly sensitive simple luminescent-chromatographic method of analyzing residual amounts of sevin in plant products is described. Use of a mixture of acetone and caustic soda as the solvent permits combination of chromatography with hydrolysis of the sevin to 1-naphthol which can be analyzed in ultraviolet light, thereby excluding a number of operations and the application of scarce reagents. The sensitivity of the method 0.5 microgramm per sample. The method can be used under agricultural conditions in agrochemical, veterinary and public-health laboratories.

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172 022 UNCLASSIFIED PROCESSING DATE--020CT70  
TITLE--FIBER FORMING PROPERTIES OF GRAFT COPOLYMERS OF POLYACRYLONITRILE  
AND THEIR MIXTURES WITH HOMOPOLYMERS --U--  
AUTH--(04)--MIGRANYAN, T.S., PERKOVA, A.D., LIVSHITS, R.L., RUDOVIN, Z.A.  
COUNTRY OF ORIGIN--USSR  
SOURCE--KHIM. VOLUKNA 1970, (2) 25-7  
DATE PUBLISHED-----70  
SUBJECT AREAS--MATERIALS  
TOPIC TAGS--POLYACRYLONITRILE FIBER, COPOLYMER, CELLULOSE RESIN,  
THIOCYANATE, POLYMER RHEOLOGY, BENDING STRENGTH, ABRASION RESISTANCE  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAME--1992/1513 STEP NO--UR/0193/70/030/002/0025/0027  
CIRC ACCESSION NO--AP0112507  
UNCLASSIFIED

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UNCLASSIFIED

PROCESSING DATE--0200170

CIRC ACCESSION NO--AP0112507

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. FIBER FORMING PROPERTIES OF POLYACRYLONITRILE (I)-NA CM CELLULOSE GRAFT COPOLYMERS (II), PREPD. IN THE PRESENCE OF FE PRIME2 POSITIVE AND H SUB2 D SUB2, AND THEIR MIXTS. WITH I WERE COMPARED. FIBERS WERE FORMED BY USE OF PPTG. BATHS OF AQ. NACNS FOR I AND THE I-II MIXTS OR CACL SUB2 BATHS FOR II. RHEOL. PROPERTIES OF POLYMER SOLNS. ARE COMPARED. ALTHOUGH MOST OF THE PHYS. MECH. PROPERTIES OF THE II FIBERS WERE UNSATISFACTORY, FIBERS FROM THE I-II MIXTS. EXCEEDED I FIBERS IN ABRASION RESISTANCE AND BENDING STABILITY. THE MOISTURE ABSORPTIVITY OF THE MODIFIED FIBERS WAS APPROX. THAT OF COTTON.

UNCLASSIFIED

1/2 014 UNCLASSIFIED PROCESSING DATE--27NOV70  
TITLE--STRUCTURE AND PROPERTIES OF CELLULOSE AND ITS DERIVATIVES. 306.  
SYNTHESIS OF GRAFT COPOLYMERS OF CELLULOSE WITH POLYACRYLONITRILE BY  
AUTHOR--(03)-BEREZA, M.P., LIVSHITS, R.M., ROGOVIN, Z.A.

COUNTRY OF INFO--USSR

SOURCE--IZV. VYSSH. UCHEB. ZAVED., KHIM. KHIM. TEKHNOL. 1970, 13(3),  
416-18

DATE PUBLISHED-----70

SUBJECT AREAS--CHEMISTRY, MATERIALS

TOPIC TAGS--CELLULOSE RESIN, POLYACRYLONITRILE, COPOLYMER, NATURAL FIBER

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRA--3008/0837

STEP NO--UR/0153/70/013/003/0416/0418

CIRC ACCESSION NO--AT0137865

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PROCESSING DATE--27NOV70

CIRC ACCESSION NO--AT0137865  
ABSTRACT/EXTRACT--(U) GP-0-

ABSTRACT. COTTON CLOTH WAS IMMERSIED IN NaOH SOLN., WRUNG OUT AND TREATED WITH H SUB2 C:CHCN (I) AT 76-80 DEGREES DURING 3 HR. THE EXTN. WITH HCONME SUB2 REMOVED THE HOMOPOLYMER. THE ACETOLYSIS (A. A. GULINA ET AL., 1965) SPLIT OFF THE POLYACRYLONITRILE GRAFTED CHAINS. SIMILARLY, NA CELLULOSE ALCOHOLATE WAS GRAFTED WITH I IN LIQ. NH SUB3 OR WITHOUT A SOLVENT. IN BOTH CASES ONLY SIMILAR TO 10 PERCENT OF THE REACTED I WAS USED IN FORMING THE GRAFT COPOLYMER. THE COPOLYMER HAD LOW MOL. WT. IN COMPARISON WITH THE COPOLYMERS PREPD. BY FREE RADICAL GRAFTING OF CELLULOSE. FACILITY: MOSK. TEKST. INST., MOSCOW, USSR.

UNCLASSIFIED

Radiobiology

USSR

UDC 612.017.1.014.46:615.849.2

SHUBIK, V. M., NEVSTRUYEVA, M. A., LIVSHITS, R. YE., and KOLOTVIN, V. A.,  
Leningrad Scientific Research Institute of Radiation Hygiene

"Effect of Nuclear Fission Products on Immunological Reactions"

Moscow, Zhurnal Mikrobiologii, Epidemiologii i Immunobiologii, No 9, 1972,  
pp 12-17

Abstract: Rats were injected once with an individed mixture of rare earth (La-140, Ce-141, Ce-144, Pr-143, Y-91, Nd-147) and alkali earth (Sr-99, Ba-140) radionuclides to determine the effect of these nuclear fission products on nonspecific (Ioffe's test, bactericidal action, lysozyme, complement serving as criteria) and specific (antibody response to inoculation of *Proteus vulgaris* and sheep erythrocytes) immunity. Nonspecific reactions and antibody formation were depressed and a large quantity of autoantibodies to liver and kidney tissues were produced. These changes were phaselike: periods of decrease alternated with phases of normalization and even stimulation. There was a distinct relationship between most of the immunological parameters and the dose of radioisotopes used. The various factors differed in sensitivity to internal irradiation.

1/1

USSR

UDC 577.391:576.809.7

SHUBIK, V. M., KOLOTVIN, V. A., LIVSHITS, R. Ye., and BRONSHTEYN, I. E.,  
Leningrad Scientific Research Institute of Radiation Hygiene, Ministry of  
Health RSFSR, Leningrad

"Comparative Study of the Dynamics of Changes in the Indexes of Non-Specific  
Immunity Under the Effect of Long-Wave and Short-Wave X-Rays"

Moscow, Radiobiologiya, Vol 11, No 4, Jul/Aug 71, pp 540-544

Abstract: Nonspecific immunological reactivity was studied upon irradiation of rats with long-wave and short-wave x-rays with an effective energy of 14 and 75 keV, respectively. The immunological reactivity was determined on the basis of the area of postinjection infiltration 24 hrs after intracutaneous injection to the animals of 0.1 ml of anti-rat serum, the bactericidal activity of the blood serum towards E. coli, the lysozyme titer of the blood serum with respect to Micrococcus lysodeicticus, and the complement titer of the blood serum as indicated by the hemolysis of ram erythrocytes. On exposure of the animals to equal doses of long-wave and short-wave radiation, the nonspecific immunity was suppressed to a greater extent by the action of short-wave than long-wave radiation. This was due to the fact that, as shown by calculations for the total body, the skin,

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USSR

SHUBIK, V. M., et al., Radiobiologiya, Vol 11, No 4, Jul/Aug 71, pp 540-544

and the spleen, the average absorbed doses were higher at equal exposure doses for the high-energy short-wave radiation than the low-energy long-wave radiation.

2/2

Polymers and Polymerization

USSR

UDC 678.742.2-137.46.22:66.018.86

TERTERYAN, R. A., LESHCHENKO, S. S., LIVSHITS, S. D., GOLOSOV, A. P.,  
ITSIKSON, L. B., MONASTYRSKIY, V. N., KARPOV, V. L., SOBOLEVA, N. S.,  
MAL'TSEVA, A. P., and ISKHAKOV, L. I.

"Radiation Stability of Ethylene and Styrene Copolymers"

Moscow, Plasticheskiye Massy, 7, 1973, pp 3-5

Abstract: A study was made of the continuous statistical copolymerization of ethylene monomers (E) with styrene (S) under conditions similar to those under which low density polyethylene is produced and also of the behavior of E + S polymers in an ionizing radiation field. The results of copolymerization studied -- grams of copolymer/hr concentration of S in the polymer, density, and others -- are given as a function of styrene concentration and pressure at 200°C. An increase in the concentration of S in the reaction mixture leads to a decrease in the copolymer yield, in its characteristic viscosity, in its melting temperature, and its crystallinity, and to an increase in the density. The presence of S monomers in the polyethylene chains and the chemical bonds between them and the methylene groups significantly increases the resistance of the material to  $\alpha$ -radiation damage. The gases evolved during the radiation of various types of polymers were determined.

1/1

USSR

UDC 669.25.028.44

SHVEDOV, L. I., PAVLENKO, Z. D., and LIVSHITS, S. L., Physicotechnical Institute, Academy of Sciences, Belorussian SSR

"Investigation of the Structure and Properties of Cast Chrome-Nickel-Aluminum Steels and the Influence of Titanium, Boron, Cerium, and Zirconium on Them"

Minsk, Izvestiya Akademii Nauk BSSR, Seriya Fiziko-Tekhnicheskikh Nauk, No 1, 1971, pp 33-37

Abstract: The article considers the influence of aluminum upon the micro-structure, strength characteristics, thermal stability, heat resistance, and irreversible change of dimensions in the cyclic heat treatment of austenitic chrome-nickel steels of the three groups 1214, 18-19, and 18-25 in a cast state. The influence of the content of nickel and of titanium, boron, cerium, and zirconium additives on the properties of these steels is investigated. One table, 2 figures, 10 bibliographic entries,

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USSR

UDC 512.25/.26+519.3:330.115

NIKITIN, Ye. N., BREKHOV, A. M., LIVSHITS, S. Ye.

"Network Method of Solution of Problems in Integer Linear Programming"

Tr. Lennigr. Inzh.-econ. In-ta [Works of Leningrad Institute of Engineering Economics], No 79, 1971, pp 84-88, (Translated from Referativnyy Zhurnal, Kibernetika, No 10, 1971, Abstract No 10 V693 by Yu. Finkel'shteyn).

Translation: The general problem of integer linear programming is studied. The ideas of the method of sequential analysis of versions are used for its solution by directed sampling (RZhMat, 1966, 1V96, 5V68, 11V279). The volume of computational work, generally quite high, is estimated.

USSR

GOLENKO, D. I., LIVSHITS, S. Ye., TORNOPOL'SKIY, Yu. Ya., YAROKER, Ya. N.

"Study of  $\epsilon$  Networks in Statistical Modeling Processes"

Tr. Leningr. Inzh.-Ekon. In-ta [Works of Leningrad Institute of Economics Engineering], 1972, No 94, pp 43-50 (Translated from Referativnyy Zhurnal Kibernetika, No 4, 1973, Abstract No 4V273, by B. Granovski).

Translation: Set  $M$  in compact metric space  $K$  is called an  $\epsilon$  network in  $K$  if for any point  $t \in K$  there is a point  $t' \in M$  which is not more than  $\epsilon$  distant from  $t$ . If  $m$  is the minimum number of points necessary to construct an  $\epsilon$  network in a certain set  $A \cap K$ , the number  $H = \log_2 m$  is called the  $\epsilon$  entropy of  $A$ . As we know, the  $\epsilon$  entropy of the set can be used to estimate the accuracy of tabulation, integration, as well as various procedures of optimization of function  $F$ , continuous in  $K$ , using the corresponding  $\epsilon$  network. The problem thus arises of constructing a sequence of points  $\{x_i\}_{i=1}^n$ ,  $x_i \in K$ , the  $\epsilon$  entropy of which with any  $n$  is near the maximum possible. In this work for the case  $K = [0, 1]$ , a comparison is given of regular and probabilistic methods of production of an  $\epsilon$  network from this standpoint. The regular method consists in construction of  $1/2$

USSR

Golenko, D. I., Livshits, S. Ye., Tornopol'skiy, Yu. Ya., Yaroker, Ya. N.,  
Tr. Leningr. Inzh.-Ekon. In-ta, 1972, No 93, pp 43-50.

sequences of equally separated points in  $[0, 1]$ , the probabilistic method consists in construction of sequences formed by values of a random quantity, evenly distributed in  $[0, 1]$ . One new method is suggested for construction of an  $\epsilon$  network, the  $\epsilon$  entropy of which increases strictly with increasing number of points.

USSR

UDC 669.018.25(075)

ROMANOVA, N. I., CHEKULAYEV, P. G., DUSEV, V. I., LIVSHITS, T. A., and  
KURDOV, M. N.,

"Metal Ceramic Hard Alloys"

Metallokeramicheskiye Tverdye Splavy (English Version Above), Metallurgiya  
Press, 1970, 352 pages

Translation of Annotation: This book presents in brief form the basic principles of the production and application of metal ceramic hard alloys. Information is presented on the initial raw material, and methods are described for producing powders of metals and carbides used in the manufacture of hard alloys.

Methods of grinding the initial materials and methods of preparing the mixtures and pressing them are described. Description are given of processes occurring during sintering of alloys, and methods of treating hard alloy products. Areas of their application in the metal working and mining industries are described. Methods of quality testing of products during preparation of hard alloys are discussed.

The book is designed as a teaching aid for professional and technical schools training workers in the production of metal ceramic hard alloys. 94 figs; 51 tables; 19 biblio. refs. 1/10

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USSR

ROMANOVA, N. I., et al., Metallokeramicheskiye Tverdyye Splavy, Metallurgiya Press, 1970, 352 pages

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USSR

UIC: 612.746.6

BIDULYA, P. N. (deceased), LIVSHITS, V. H., and BELYI, D. I.

"Influence of Pressure on Rate of Cooling During Crystallization"

Izv. VUZ, Tsvetnaya Metallurgiya, No 3, 1970, pp 161-165

Abstract: This work represents an attempt to record the cooling rate using a practically inertia-free apparatus. The cooling rate curves were recorded using a N-700 oscilloscope with a set of type M 001 oscillographic galvanometers. The temperature of ferrous metals was measured using a type KHA thermocouple. The temperature of steels was measured using type VR 5/20 and PP thermocouples. The junctions were not shielded, and were placed in a matrix at 15-25 mm from the floor of the press mold. Typical cooling curves with and without pressure are presented for zinc. The cooling rate is considerably higher for cooling under pressure than for cooling with free crystallization. It was found that cooling rate is practically independent of pressure during crystallization at pressures over 15 t. The cooling rate with solidification under pressure was approximately one and one-half to two times higher than with free crystallization. It was impossible to determine the solidification rate more precisely due to difficulties of precise measurement of the actual crystallization interval. The authors conclude that the main factor determining the acceleration in solidification is improved heat transfer.

1/1

Instrumentation and Equipment

USSR

UDC 620.179.14

YERSHOV, R. Ye., and LIVSHITS, V. L., Institute of Physics of the Siberian  
Department of the Academy of Sciences USSR

"Device for the Homogeneity Control of the Saturation Flux in Thin  
Cylindrical Magnetic Films"

Sverdlovsk, Defektoskopiya, No 2, 1971, pp 127-129

Abstract: A device for the control of thin cylindrical magnetic films by only one parameter, the saturation flux, is described by reference to its principal diagram. The block diagram consists of the sinusoidal voltage exciter, resonance power amplifier, tuned power amplifier, and reconing unit. The characteristics of the control device are presented. The device can also be used for controls of production processes of thin cylindrical magnetic films. One figure, one bibliographic reference.

1/1

USSR

UDC 614.3(47-22)

FONAREV, L. S., LIVSHITS, V. I., and KONDRASHOV, A. K., Chair of Social Hygiene and Public Health Organization, Leningrad Sanitary Hygiene Medical Institute, and Leningradskaya Oblast Sanitary Epidemiological Station

"Work of Sanitary Epidemiological Stations with Rural Public Sanitary Inspectors (Based on Materials From Leningradskaya Oblast)"

Moscow, Gigiyena i Sanitariya, No 7, Jul 70, pp 64-68

Abstract: In 1965 the health authorities of Leningradskaya Oblast decided to change the existing forms of volunteer assistance to sanitary epidemiological stations and physicians in rural areas by organizing a corps of public health inspectors, providing them with systematic training, and then assigning them specific responsibilities (e.g., inspection of sanitary conditions in homes, warehouses, and on farms; education of the people in the value of personal hygiene and regular medical check-ups; etc.). In just a few years these rural public sanitary inspectors have made a significant contribution to reducing morbidity for a number of infectious diseases, ulcers, and parasitic diseases. Training and assignment of work is the responsibility of sanitary epidemiological stations; the Red Cross helps to locate and recruit likely candidates.

1/1

USSR

UDC: None

SAZONOV, Yu. I. and LIVSHITS, V. M.

"Ultrasonic Measurer of Elastic Constants in Metals and Alloys"

Moscow, Otkrytiya, izobreteniya, promyshlennyye obrastysy,  
tovarnye znaki, No 4, 1973, p 97, No 363908

Abstract: This device, utilizing ultrasonic pulses, has the distinctive features of a two-wave electromagnetic-acoustic converter connected to the ultrasonic generator, and digital devices for measuring the ratio and product of the time intervals obtained in the procedure. These devices improve the accuracy of the measurement. An exiguous description, unillustrated, is given of the other circuits in the device.

1/1

USSR

UDC: 621.396.626

VODOP'YANOVA, V. V., LIVSHITS, V. M.

"Resistance to Interference in Reception of Frequency Telegraphy Signals in Communications Systems With 'Jumping' Frequency"

Moscow, Radiotekhnika, Vol. 26, No 5, May 71, pp 49-54

Abstract: The method proposed by P. A. Bello and B. D. Nelin (Trans. IRE, v. CS-11, 1963, No 2) is used to determine the resistance to interference of communications systems with jumping frequency. The "jumping frequency method" is a procedure for correction of intersymbol interference. The essence of the method consists in a programmed change of the carrier frequency of the transmitted signal and a shift of the receiver passband. The resultant general relationships are illustrated by curves for the error probability as a function of the signal-to-noise ratio for  $\lambda = 0$  and 1 (where  $\lambda$  is the number of pairs of "jumping" frequencies) and various rates of data transmission in the channel in the case of two branches of separation. A curve is also given for the signal-to-noise ratio necessary for a given error probability.

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USSR

UDC: 512.25/.26+519.3:330.115

LIVSHITS, V. N.

"On the Monotonicity of the Solution of Problems in Mathematical Programming With Linear Limitations"

Tr. 3-y Zimm. shkoly po mat. programmir. i smezhn. voпр., 1970, vyp. 2  
(Works of the Third Winter School on Mathematical Programming and Related Problems, 1970, No 2), Moscow, 1970, pp 398-402 (from RZh-Kibernetika, No 9, Sep 71, Abstract No 9V490)

Translation: In addition to the convex programming problem

$$\min \{f(x) \mid Ax=b, x \geq 0\} \quad (1)$$

the author considers the two parametric problems

$$\min \left\{ f(x^k) \mid Ax^k = \sum_{i=1}^k b_i, x^k \geq 0 \right\} \quad (2)$$

$$\min \{f(x_t) \mid Ax_t = tb, x_t \geq 0\} \quad (3)$$

The parameters  $k = 1, 2, \dots$  and  $t$  are varied; when  $k = s$ ,  $\sum_{i=1}^s b_i = b$  and

1/2

USSR

LIVSHITS, V. N., Tr. 3-y Zimn. shkoly po mat. programir. i smezhn. vopr., 1970, vyp. 2, Moscow, 1970, pp 398-402

$t = 1$ , problems (2) and (3) respectively coincide with (1).

Theorem 1. In order for the sequence of optimum solutions of problems (2) for  $k=1, 2, \dots, s$ ,  $\bar{x}^1, \bar{x}^2, \dots, \bar{x}^s$  to be monotonically increasing ( $\bar{x}^{k+1} > \bar{x}^k$ ),

it is necessary and sufficient  $\bar{x}^k = \sum_{i=1}^k \bar{y}_i$ , where  $\bar{y}_i$  is the optimum solution

of the problem  $\min \{ \|(\bar{x}^{k-1} + y_i)\|; Ay_i = b_i, y_i > 0 \}$ .

Theorem 2. If  $f(x)$  is homogeneous, then  $dx_i/dt > 0$ . S. Lebedev.

2/2

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USSR

UDC 631.291.27

YEFIMOV, V. M., LIVSHITS, Z. A., Novosibirsk

"Some Methods of Improving the Efficiency of Digital Data Compression Systems"

Novosibirsk, Avtometriya, No 2, 1973, pp 50-56

Abstract: A study was made of the problems connected with the efficiency of using various linear signal conversions, anticipating their compression by a zero-order predictor with fixed aperture. The paper is an extension of a previous paper by the same authors (V. M. Yefimov, et al., Avtometriya, No 4, 1972).

First, the one-dimensional case is considered in which the signal subjected to compression is a random function of one coordinate (for time determination). Then the case is considered in which a mixture of a "smooth" gaussian signal and gaussian noise not correlated with the signal and mean square differentiable is fed to the input of the predictor with fixed aperture operating in the continuous reading mode. The mathematical description of the optimal ideal filter is given. With regard to the effectiveness of using preliminary algebraic linear transformations of the signals and multichannel systems, it is noted that the linear transformations leading to decorrelation of the signals are not optimal. A two-channel system is examined briefly as proof of this statement.

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USSR

UDC 591.132.8:598.9+616.981.452

LOBACHEV, V. S., LEVI, M. I., and LIVSHITZ, M. M., Moscow State University and  
Central Control-Research Laboratory of Moscow Municipal Disinfection Station

"Retention of the Specific Antigen of Plague Bacteria in Pellets of Predatory  
Birds"

Moscow, Zoologicheskii Zhurnal, Vol 50, No 10, 1971, pp 1593-1595

Abstract: Specific antigens found in the pellets of predatory birds which have eaten the corpses of infected rodents survive longer than the plague bacteria themselves. This experiment, in which a study was made of pellets of the little owl and the black kite after feeding on dead mice infected with the vaccinal strain EV, compares the antibody neutralization reaction with the passive hemagglutination reaction. The latter was more sensitive. The antigen is better preserved in the pellets of nocturnal predators and more concentrated in hair than in bones. Because of its efficiency, this method is one of the best to be utilized in epizootiological experiments with regard to small mammals.

1/1

1/3 009 UNCLASSIFIED PROCESSING DATE--23OCT70  
TITLE--INFLUENCE OF VARIOUS ADDITIVES AND THE DEGREE OF DISPERSION OF  
SILICA CONTAINING COMPONENTS ON THE MOLDING AND DRYING OF FAIENCE SOLIDS  
AUTHOR-(02)-RYSHCHENKO, M.I., LIVSON, A.A.  
COUNTRY OF INFO--USSR  
SOURCE--STEKLO KERAM. 1970, 27(2), 36-8  
DATE PUBLISHED-----70  
SUBJECT AREAS--CHEMISTRY  
TOPIC TAGS--SILICA, PHOSPHATE, SODIUM COMPOUND  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAE--1996/1959 STEP NO--UR/0072/70/027/002/0036/0038  
CIRC ACCESSION NO--AP0118919  
UNCLASSIFIED

2/3 009

UNCLASSIFIED

PROCESSING DATE--23OCT70

CIRC ACCESSION NO--AP0118919

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE PRESENT WORK WAS UNDERTAKEN TO STUDY THE EFFECT OF THE NATURE AND THE DEGREE OF DISPERSION OF SILICA CONTG. COMPONENTS, ADDNS. OF NA PYROPHOSPHATE, THE PETROV CATALYST (SURFACE ACTIVE MIXT. CONTG. NAPHTHENE AND ALKYL ARYLSULFONIC ACIDS), AND THE BENTONITE ON THE POST PRESSING EXPANSION OF FAIENCE POWDERS DURING THEIR PRESSING. THE WATER EMISSION PROCESS DURING THE DRYING OF THE SAMPLES MADE OF FAIENCE BODIES, INTO THE COMPN. OF WHICH THERE WAS INTRODUCED A SILICA CONTG. COMPONENT DIFFERENT IN NATURE AND THE DEGREE OF DISPERSION, WAS ALSO STUDIED. THE BODIES TO BE STUDIED WERE PREPD. BY THE CLINKER TECHNIQUE. THE PRESSING POWDERS OBTAINED WERE SIEVED THROUGH A SIEVE CONTG. 64 HOLES-CM PRIME2. THE SAMPLES FOR THE VARIOUS TESTS WERE PRESSED AT A PRESSURE OF 225 KG-CM PRIME2 AND A POWDER MOISTURE OF 9.5PERCENT. THE RESULTS SHOW THAT WITH INCREASING AMT. OF THE SILICA CONTG. COMPONENT PRESENT THE TOTAL VALUE OF THE POST PRESSING EXPANSION INCREASES SOMEWHAT. THIS CAN, TO SOME DEGREE, BE EXPLAINED BY THE PRESENCE OF COMPRESSED AIR, THE REMOVAL OF WHICH FROM MORE DISPERSED BODIES IS DIFFICULT. A MORE EFFECTIVE ADDN. IS NA POLYPHOSPHATE. THE DECREASE IN THE POSTPRESSING EXPANSION VALUE UPON THE INTRODUCTION OF THE PETROV CONTACT CAN BE EXPLAINED PRIMARILY BY THE HYDROPHOBIZATION OF THE SURFACE OF THE PARTICLES OF THE PRESSING POWDER. ON THE BASIS OF THE RESULTS OBTAINED IT IS CONCLUDED THAT THE OPTIMUM ADDNS. REDUCING THE POST PRESSING EXPANSION VALUE DURING THE PRESSING OF FAIENCE POWDERS ARE THE FOLLOWING: BENTONITE 3, NA POLYPHOSPHATE 0.05, AND PETROV CATALYST 0.05-0.1PERCENT. THE MOST EFFECTIVE IS THE BENTONITE ADDN.

UNCLASSIFIED

3/3 009 UNCLASSIFIED PROCESSING DATE--23OCT70  
CIRC ACCESSION NO--AP0118919  
ABSTRACT/EXTRACT--WITH INCREASING DEGREE OF DISPERSION OF THE SILICA  
CONTG. COMPONENTS IN THE COMPN. OF THE FAIENCE BODIES, THE POST PRESSING  
EXPANSION SOMEWHAT INCREASES AND THE REMOVAL OF MOISTURE DURING DRYING  
BECOMES MORE DIFFICULT. FACILITY: KHAR'KOV, POLITEKH. INST. IM.  
LENINA, KHARKOV, USSR.

UNCLASSIFIED

1/2 022 UNCLASSIFIED PROCESSING DATE--23OCT70  
TITLE--ENHANCING THE PHYSICOMECHANICAL PROPERTIES OF POLYETHYLENE BY  
FUSING IT WITH OTHER POLYMERS -U-  
AUTHOR--(03)-PEGLOVSKIY, V.L., SIDORENKO, V.I., LIVVY, G.V.  
COUNTRY OF INFO--USSR  
SOURCE--KHIM. PROM. UKR. 1970, (1), 10-13  
DATE PUBLISHED-----70  
SUBJECT AREAS--CHEMISTRY, MATERIALS  
TOPIC TAGS--POLYSTYRENE RESIN, POLYPROPYLENE, POLYETHYLENE, PLASTIC  
MECHANICAL PROPERTY, COMPRESSIVE STRENGTH, BENDING STRENGTH  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRA--1997/0752 STEP NU--UR/0436/70/000/001/0010/0013  
CIRC ACCESSION NO--AP0119659  
UNCLASSIFIED

2/2 022

UNCLASSIFIED

PROCESSING DATE--23OCT70

CIRC ACCESSION NO--AP0119659

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE ADDN. OF SIMILAR TO 20PERCENT  
POLYSTYRENE OR SIMILAR TO 50PERCENT POLYPROPYLENE TO POLYETHYLENE  
DECREASES ITS SHRINKAGE AND INCREASES ITS COMPRESSION AND BENDING  
STRENGTH.

UNCLASSIFIED

1/2 013 UNCLASSIFIED PROCESSING DATE--04DEC70  
TITLE--MELTS OF POLYPROPYLENE, POLYVINYL CHLORIDE, AND POLYCAPROLACTAM  
WITH OTHER POLYMERS IN THE FOOTWEAR INDUSTRY -U-  
AUTHOR-(03)-SIDORENKO, V.I., PEGLOVSKIY, V.L., LIVYY, G.V.  
COUNTRY OF INFO--USSR  
SOURCE--KOZH.-OBUV. PROM. 1970, 12(5), 27-30  
DATE PUBLISHED-----70  
SUBJECT AREAS--MATERIALS, MILITARY SCIENCES  
TOPIC TAGS--PROPYLENE, POLYVINYL CHLORIDE, CAPROLACTAM, FOOTGEAR,  
POLYISOBUTYLENE, NYLON  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY FICHE NO----FD70/605012/007 STEP NO--UR/0498/70/012/005/0027/0030  
CIRC ACCESSION NO--AP0140294  
UNCLASSIFIED

2/2 013

UNCLASSIFIED

PROCESSING DATE--04DEC70

CIRC ACCESSION NO--AP0140294

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. A MELT CONTG. 30PERCENT POLYSTYRENE (I) AND 70PERCENT POLYPROPYLENE (II) HAS LOWER SHRINKAGE THAN II ALONE. THE SP. HEAT CAPACITY OF THE MELT IS LOWER THAN THAT OF II. THESE PROPERTIES SHORTEN THE MOLDING TIME AND INCREASE THE PRODUCTION RATE OF SHOE COMPONENTS FROM THE MELTS BY 15-17PERCENT. THE ADDN. OF POLYISOBUTYLENE TO II INCREASES ITS ELASTICITY, RESISTANCE TO COLD, AND ADHESION. THE BLENDING OF POLY(VINYL CHLORIDE) WITH I AND HIGH D. POLYETHYLENE (III) IMPROVES ITS STRESS DEFORMATION CHARACTERISTICS, COLD RESISTANCE, AND MECH. STRENGTH. THE CHANGES OF THE TENSILE STRENGTH AT BREAK OF III MELTS WITH NYLON 6 SUGGEST CHEM. INTERACITON BETWEEN THESE 2 POLYMERS. THE APPLICABILITY OF THESE MELTS IN THE MANUF. OF SHOE COMPONENTS IS DISCUSSED.

UNCLASSIFIED

1/2 006 UNCLASSIFIED PROCESSING DATE--20NOV70  
TITLE--SYSTEMATIZATION OF DRYING PROCESSES FOR SEMIFINISHED LEATHER  
PRODUCTS --U--  
AUTHOR--(03)--KRIPIN, A.G., LIVYY, G.V., BARGINSKIY, M.A.  
COUNTRY OF INFO--USSR  
SOURCE--KOZH. GBUV. PRUM. 1970, 12(3), 27-32  
DATE PUBLISHED--70  
SUBJECT AREAS--MATERIALS  
TOPIC TAGS--TANNING MATERIAL, LEATHER  
CENTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAE--2000/1733 STEP NO--UR/0498/70/012/003/0027/0032  
CIRC ACCESSION NO--AP0125354  
UNCLASSIFIED

2/2 006

UNCLASSIFIED

PROCESSING DATE--20NOV70

CIRC ACCESSION NO--AP0125354

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. SEVERAL METHODS USED FOR DRYING  
CHROME TANNING UNFINISHED LEATHERS ARE DISCUSSED AT LENGTH. THE KNOWN  
METHODS AND THOSE PRESENTLY BEING DEVELOPED WERE TABULATED AND THEIR  
ADVANTAGES AND DISADVANTAGES NOTED.

UNCLASSIFIED

USSR

UDC 632.95

GILLER, S. A., EGERT, V. E., LIYELGALVE, A. A., AVOTA, L. YA., and SHIMAN-  
SKAYA, M. V.

"Methods of Determining Residual Quantities of Phenazone in Foodstuffs,  
Soil, Water and Air"

Tr. 2-go Vses. soveshch. po issled ostatkov pestitsidov i profilakt.  
zagryazneniya imi produktov pitaniya, kornov i vnaesh. sredy. (Works of the  
Second All-Union Conference on Investigation of Residues of Pesticides, and  
Prevention of Pesticide Contamination of Foodstuffs, Fodder and the External  
Environment), Tallinn, 1971, pp 271-272 (from RZh-Khimiya, No 11, Jun 72,  
Abstract No 11N454)

Translation: In order to determine residual amounts of phenazone, (the  
specimen is) hydrolyzed with a 40% sodium hydroxide solution in the presence  
of zinc dust, the resultant aniline is distilled (without water vapor) and  
diazotized, and coupled with  $\alpha$ -naphthylamine, and the optical density is  
determined (on 537 nm). The sensitivity of the method is 1 ng/kg.

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USSR

UDC 538.4

GAYILITIS, A., LIYELAUSUS, O.

"The Internal Hydraulics of MHD Machines with Uneven Distribution of Forces"

Magnitnaya Gidrodinamika, No 2, 1971, pp 123-127.

ABSTRACT: It is demonstrated that if a moving electrodynamic force is distributed unevenly through the cross section of a channel, the pressure developed during turbulent flow must be determined by solution of the problem of internal hydraulics of the channel. The possibility of this solution is demonstrated under conditions of high local slipping. The differences of the  $p(Q)$  characteristics from those generally accepted are analyzed. It is noted that local velocities will greatly exceed the mean flow velocity.

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1/2 015 UNCLASSIFIED PROCESSING DATE--16OCT70  
TITLE--TACHYPHYLACTIC PROPERTIES OF SOME ANGIOTENSIN II ANALOGS -U-  
AUTHOR--(02)-LIYELAYS, YA.P., CHAYEVSKAYA, YE.M.  
COUNTRY OF INFO--USSR L  
SOURCE--FARMAKOL. TOKSIKOL. (MOSCOW) 1970  
DATE PUBLISHED-----70  
  
SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES  
TOPIC TAGS--VASODILATOR, CARDIOVASCULAR DRUG, SYNERGY, DRUG DOSAGE  
RESPONSE  
  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAME--1986/1672 STEP NO--UR/0390/70/033/001/0051/0053  
CIRC ACCESSION NO--AP0103438  
UNCLASSIFIED

2/2 015

UNCLASSIFIED

PROCESSING DATE--16JCT70

CIRC ACCESSION NO--AP0103438

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. ALPHA, ASPARAGINYL PRIME1, VALYL PRIME5, ANGIOTENSIN II EXHIBITED CROSS TACHYPHYLAXIA IN NEPHRECTOMIZED RATS WITH BOTH BETA, ASPL PRIME1, VALYL PRIME5, ANGIOTENSIN II AND SUCCINYL PRIME1, VALYL PRIME5, ANGIOTENSIN II. REPEATED ADMINISTRATION OF LARGE ALPHA, ASPARAGINYL PRIME1, VALYL PRIME5, ANGIOTENSIN II DOSES (10 MUG) INDUCED TACHYPHYLACTIC RESPONSES; BETA, ASPARTYL PRIME1, VALYL PRIME5, ANGIOTENSIN II HAD THE SAME EFFECT, NOT ONLY IN LARGE DOSES, BUT ALSO WITH 0.1 MUG FOLLOWING 10 MUG. FACILITY: LAB. FARMAKOL., INST. ORG. SINT., RIGA, USSR.

UNCLASSIFIED

USSR

LIYELPETER, YA., Doctor of Technical Sciences, Deputy Director of the Institute of Physics, Academy of Sciences Latvian SSR

"In a Single Complex"

Sovetskaya Latvija, No 79, 4 Apr 73, p 2

Translation: Magnetohydrodynamics studies the interaction of electrically conducting media with a magnetic field. Here we discuss only one type of such conducting media, liquid metals.

If a current passes through a conductor in a magnetic field, there is a force on the conductor. This is the operating principle of all electric motors and many other devices, including magnetohydrodynamic ones. These have one substantial difference from electric motors -- the conductor in an MHD device is a liquid metal. Thus these devices transform electrical energy into the mechanical energy of motion of a liquid (molten) metal.

The best known type of MHD device is the MHD pump serving to transfer molten metals. Many other varied devices have also been designed to fulfill some specific requirement: measuring devices, flow meters, stirrers, nozzles, separators, stoppers, etc. Their important advantage is their ability to act on the liquid metal without contact, using electromagnetic fields. In addition, MHD devices are easily controlled. Many of their designs were developed in the Institute of Physics of the Academy of Sciences Latvian SSR

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LIYELPETER, YA., Sovetskaya Latvija, No 79, 4 Apr 73, p 2

and in its special design office for magnetohydrodynamics and reported in authors' certificates, and some have been patented abroad.

MHD machines find a variety of applications in the national economy. For example, in the VEF factory a device for tin-plating printed circuits in radio apparatus has long been in use; it was developed as a result of studies by the director of a laboratory of the Physics Institute, Candidate of Physical-Mathematical Sciences, A. E. Mikel'son.

In the special design office of the Magnetohydrodynamic Institute a complex of technological equipment has been designed to produce mercury with a high degree of purity, which is being introduced in the Ukraine at the Nikitov Mercury Combine and at one of the enterprises of Algeria in a mercury purification shop.

MHD pumps have been put into the production cycle of small enterprises in the Soviet Union, being used in scientific research institutes and design bureaus as stand equipment for scientific experiments. Other MHD devices, for example, a nozzle which regulates the flow rate of a stream of molten metal, have been developed by Candidate of Technical Sciences Yu. M. Gel'fgat; they are used in the continuous pouring of metal and in a number of other technological processes. Under the direction of Candidate of Physical-Mathematical Sciences R. K. Kalnyn' and Candidate of Technical Sciences A. S. Ginzburg,

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USSR

LIYELPETER, YA., Sovetskaya Latviya, No 79, 4 Apr 73, p 2

contact-free electromagnetic flow meters for liquid metals have been developed at the Institute of Physics and in the Special Design Office; these meters are presently being introduced in industry.

The list of MHD machines introduced could be prolonged to indicate their significance in the technical progress of several important branches of industry. It could also be added that the workers at the Institute of Physics not only have new ideas, but also have produced research results indicating significant potentials for possible applications of magnetohydrodynamics.

The staff of the Institute would like to realize their potentialities as rapidly as possible. However, here we encounter substantial difficulties of an organizational nature.

Magnetohydrodynamic technology in its developed implementation can make a substantial contribution to the mechanization and automatization of the metallurgical and foundry industries. The Institute has highly qualified staff members who have worked in the area of MHD and thermal physics, capable of solving the most difficult problems related to the current tasks of scientific-technical progress. A financially independent Special Design Office for Magnetohydrodynamics has been established at the Institute, employing almost 100 persons in the development of equipment on the basis of scientific concepts.

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LIYELPETER, YA., Sovetskaya Latvya, No 79, 4 Apr 73, p 2

However, the academicians of the Physics Institute in his Special Design Office does not have a large experimental base, so that many good ideas which would be quite useful to the national economy frequently cannot be realized. To create such a base is beyond the Institute's capacity, while no interest is yet apparent from industry. Thus, our workers have ideas and concepts but do not have any real possibility of substantially accelerating the tempo at which scientific developments are introduced. What is the Problem?

It is natural that the criterion of expediency in introducing some development is its economic effectiveness. From the viewpoint of economic effectiveness, it would seem that we should go over to MHD devices. The scientists who developed them can give only a limited evaluation of the purely technical and technological side of the new instruments. Frequently in a scientific research institute the effectiveness of work performed is determined only by emotional means.

The determination of the efficiency of MHD devices should be approached only in a coordinated manner. For this the Institute of Physics does not have specialists in metallurgy, materials handling, and economics. They are probably not allowed to enter the staff of such an institute. It would be more correct to evaluate the efficiency of our structures by conducting an appropriate study in the branches of the Scientific Research Institute.

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Our Institute, along with other lines of research, is concerned with magnetohydrodynamics as one of a large complex of problems falling under the competence of scientific establishments of the nation. The results of efforts by Latvian physicists are timely and in proper sequence, not related only to our Republic but, for example, to the metallurgical enterprises of other republics and oblasts.

As a completely scientific establishment, our Institute and its Special Design Office do not have a production base for making and testing experimental models of MHD devices for metallurgical purposes. The question of creating an experimental factory within the Institute has been considered for a long time. This would greatly accelerate the process of introducing scientific developments. Long ago scientists and productive workers considered one of the forms of cooperation to be the combination of scientific-research institutes with planning and design organizations which have at their disposal experimental factories. It would then be possible in shorter time spans to prepare and bring to the appropriate level an experimental sample or even a small series of products. An authoritative example of this combination is the well known Institute of Electric Welding named after O. Paton.

Our Institute has every possibility, along with the Special Design Office of Magnetohydrodynamics, of combining itself with an experimental enterprise. The positive results of such a combination cannot be doubted.

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USSR

UDC: 533.09.07

AUZINYA, L. K., LIYEPINYA, V. E., ZAKE, M. V., MEL'NIKOV, V. K.,  
MEL'NIKOV, VI. K., UNGURS, I. A., and TSIYELENS, U. A.

"Method of Complex Experimental Investigations of Thermophysical  
Processes in a Chemically Active Coaxial Plasma Jet With Ti  
Particles"

Riga, Izvestiya Akademii nauk Latvivskoy SSR, No 2, 1972, pp 60-68

Abstract: Very little attention is now being given to low-temperature plasma jets with dispersed particles. Consequently, the purpose of this paper is to give the results of complex experimental investigations into the coaxial jet of a low-temperature argon plasma with dispersed particles of Ti. Measurements are made of the gas-dynamic parameters of a single-phase jet, variations in the chemical composition of the dispersed particles from the characteristics of the two-phased jet are studied, the spectral and integral characteristics of energy losses through radiation are obtained, and the electrical conductivity of the jet flux is investigated. The experimental equipment, a diagram of which is given, consists of arc heaters, a coaxial nozzle, a device for introducing powders into the jet, and measuring instruments. Of the features of these experiments,  
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USSR

UDC: 533.09.07

AUZINYA, L. K., et al, Izvestiya Akademii nauk Latvyskoy SSR,  
No w, 1972, pp 60-68

the most interesting is the chemical conversion of the Ti into  
compounds containing large quantities of nitrogen in the form of  
nitrides and oxynitrides.

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1/2 014  
TITLE--ALKYLATION OF BENZENE BY N-OCTENES IN THE PRESENCE OF ETHYLALUMINUM  
DICHLORIDE AND A COMPLEX OF BORON FLUORIDE WITH POLYPHOSPHORIC ACID -U-  
AUTHOR--(03)-LESMENT, T., LIYV, T., KORV, M.  
COUNTRY OF INFO--USSR  
SOURCE--EESTI NSV TEAD. AKAD. TIOM., KEEM., GEOL. 1970, 19(1), 46-51  
DATE PUBLISHED-----70  
SUBJECT AREAS--CHEMISTRY  
TOPIC TAGS--CATALYST, ALKYLATION, BENZENE, ORGANALUMINUM COMPOUND,  
CHLORINATED ORGANIC COMPOUND, BENZENE DERIVATIVE, OCTANE, ISOMERIZATION,  
CHEMICAL REACTION RATE  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRA--1993/0707  
STEP NO--UR/0470/70/019/001/0046/0051  
ACCESSION NO--AP0113571  
UNCLASSIFIED

PROCESSING DATE--23OCT70

UNCLASSIFIED

2/2 014

CIRC ACCESSION NO--AP0113571  
ABSTRACT/EXTRACT--(U) GP-0-

ABSTRACT. REACTANT AND CATALYST RATIOS AND REACTION TIME DURING ALKYLATION OF C SUB6 H SUB6 BY 1-OCTENE (I) AT 20 DEGREES WERE STUDIED. ADDING I DROPWISE TO C SUB6 H SUB6 ON ETALCL SUB2 DURING 10 MIN, AND STIRRING THE RESULTING MIXT. 10 MIN GAVE 100 PERCENT CONVERSION I: 64.6 PERCENT 2-PHENYLOCTANE (II), 24 PERCENT 3-PHENYLOCTANE (III), AND 11.4 PERCENT 4-PHENYLOCTANE (IV). WHEN PART OF THE C SUB6 H SUB6 WAS RESERVED FOR ADDN. WITH I TO THE CATALYST, A DECREASE IN THE OLEFIN C SUB6 H SUB6 RATIO FROM 1:2 TO 1:16 DID NOT AFFECT THE ISOMERIC PRODUCT COMPN., BUT AN INCREASE TO 1:0.5-1 REDUCED THE RELATIVE YIELD OF II. WHEN BF SUB3 POLYPHOSPHORIC ACID WAS USED AS CATALYST, THE ISOMERIZING EFFECT WAS STRONGER, AND THE RELATIVE YIELD OF DIPHENYLOCTANES WAS RAISED APPRECIABLY, AND THE MAX. PHENYLOCTANE YIELD (60.4 PERCENT) CORRESPONDING TO A II-III-IV RATIO OF 35:36.2:28.8 WAS OBTAINED AT A CATALYST OLEFIN RATIO OF 0.724:1.94. A REACTION TIME OF 240 MIN, AND 95.6 PERCENT I CONVERSION. WHEN 4-OCTENE (V) WAS SUBSTITUTED FOR I, THE BF SUB3 POLYPHOSPHORIC ACID CATALYST OLEFIN RATIO WAS 2.84:5.24, AND V CONVERSION WAS 84.8 PERCENT AT THE END OF 20 MIN; THE II-III-IV RATIO WAS 27.5:39.7:32.8 AND THE MONOPHENYLOCTANE YIELD WAS 63.5 PERCENT.

FACILITY: INST. KHIM., TALLIN, USSR.

UNCLASSIFIED

USSR

LEYVA, T.

"Characteristic Nonaxisymmetric Oscillations of Shells of Rotation of Negative Gaussian Curvature"

Tr. Tallin. politekhn. in-ta (Works of Tallin Polytechnical Institute), 1970, A, No 293, pp 47-60 (from RZh-Mekhanika, No 11, Nov 70, Abstract No 11V275)

Translation: This article contains a study of the free oscillations of a thin elastic shell of rotation of negative gaussian curvature. In studying the part of the spectrum lying in the vicinity of the least oscillation frequency, the asymptotic integration method is used. The shell is closed in the peripheral direction, and it is bounded by two parallels. The equation of the natural frequencies is presented for a shell rigidly sealed along the two parallels. The frequencies and shapes of the oscillations of part of the torus for which the radii of curvature have opposite signs are found as an example.

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USSR

UDC: 539.3

ЛИТВА, Т. В., ТОВСТИК, П. Ye.

"On Stability in the Linear Approximation for Shells of Revolution With Negative Gaussian Curvature"

V sb. Probl. mekhan. tverd. deformir. tela (Problems in the Mechanics of a Deformable Solid--collection of works), Leningrad, "Sudostroyeniye", 1970, pp 231-238 (from RZh-Mekhanika, No 9, Sep 70, Abstract No 9V101)

Translation: The authors consider the linear formulation of the problem of loss of stability in negatively curved shells of revolution which are closed in the peripheral direction as they are subjected to transverse and contour loads. It is assumed that the initial state is axisymmetric and momentless. With the aid of the asymptotic method of integration, based on the assumption that peripheral deformation predominates, the problem reduces to solution of an ordinary differential equation of second order with variable coefficients. Formulas for the upper critical load are derived for certain cases of loading and edge fastening. The relationship with the problem of nontrivial deformations of the middle surface of the shell is considered. A. V. Sachenkov.

1/1

1/2 033 UNCLASSIFIED PROCESSING DATE--27NOV70  
TITLE--CHANGE IN THE FATIGUE STRENGTH OF STEEL UNDER FRICTION CONDITIONS  
IN RELATION TO THE QUALITY OF THE LUBRICANT -U-  
AUTHOR-(02)-LIZANETS, M.V., POKHMURSKY, V.I.  
COUNTRY OF INFO--USSR  
SOURCE--FIZ. KHIM. MEKHA. MAT., 1970, 6, (2), 99-100  
DATE PUBLISHED-----70  
SUBJECT AREAS--MATERIALS  
TOPIC TAGS--FATIGUE STRENGTH, STRUCTURAL STEEL, METAL FRICTION,  
LUBRICATING OIL, INTERNAL COMBUSTION ENGINE COMPONENT  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAE--3002/1831 STEP NO--UR/0369/70/006/002/0099/0100  
CIRC ACCESSION NO--AP0124199  
UNCLASSIFIED

2/2 033

UNCLASSIFIED

PROCESSING DATE--27NOV70

CIRC ACCESSION NO--AP0129199

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE FATIGUE STRENGTH OF STRUCTURAL STEEL SAMPLES SUBJECTED TO FATIGUE LOADING UNDER ORDINARY CONDITIONS AND ALSO UNDER CONDITIONS OF SEVERE FRICTION WAS STUDIED IN RELATION TO THE QUALITY OF THE LUBRICANT EMPLOYED. CONSIDERABLE DIFFERENCES IN FATIGUE STRENGTH AND ELECTRODE POTENTIAL WERE OBTAINED WITH PURE MOTOR OIL AND OIL WHICH HAD SPENT SOME TIME IN AN INTERNAL COMBUSTION ENGINE, RESP. THE PRACTICAL IMPORTANCE OF THESE DIFFERENCES IN RELATION TO THE LIFE OF MOVING ENGINE PARTS IS CONSIDERED.

UNCLASSIFIED

USSR

UDC 539.376

LIZAREV, A. D., MEL'NIK, L. N.

"Viscous-Elastic Deformation of Surface Layers Under the Influence of Normal and Tangential Forces"

Izvestiya Akademii Nauk BSSR, Seriya Fiziko-Tekhnicheskikh Nauk, 1971, No 4, pp 118-123.

ABSTRACT: A solution is presented for the problem of the displacement of points on the surface of a viscous-elastic half space with simultaneous application of normal and tangential forces. An equation for displacements is produced, expressed in exponential-fractional Rabotnov Functions. Numerical results are produced using a Minsk-22 computer for time  $t \rightarrow \infty$ . It is demonstrated that with the initial change in  $t$ , the displacements increase intensely, after which they approach asymptotic values; the position of the points of maximum displacements relative to the points of application of concentrated forces also changes.

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USSR

UDC: 535.2/.3

LIZENGEVICH, A. I., FOMIN, V. V.

"Peculiarities of Formation of the Contour of the Limbs of Spectral Lines in the Case of Self-Broadening"

Leningrad, Optika i Spektroskopiya, Vol 34, No 3, Mar 73, pp 484-489

Abstract: A previously proposed method (S. D. Tvorogov, V. V. Fomin, Opt. i Spekt., 30, 413, 1971) is used to investigate the contour of the limbs of spectral lines in the case of self-broadening. It is assumed that the principal contribution to formation of the contour of the limbs of the line is made by resonance phenomena accompanying the interaction of molecules, so that the molecules can be treated as two-level systems. The solution is based on generally accepted assumptions for problems of this kind: collisions are adiabatic and binary, intermolecular forces of repulsion are disregarded. It is found that two types of distributions are possible in both the high-frequency and low-frequency limbs of the spectral lines, depending on the intramolecular parameters: distribution close to statistical, and exponential distribution. The exponential distribution in the low-frequency limb may take two forms.

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USSR

UDC 621.372.83

PRAVDA, V. I., LIZHDVOY, K. YA., ANDRAKOVSKAYA, I. A.

"Experimental Study of the Coupling Impedance of Resonator Chains with a Positive Mutual Inductance Coefficient"

Kiev, Izvestiya vuzov SSSR, Radioelektronika, Vol XV, No 8, 1972, pp 1037-1041

Abstract: The results are presented from an experimental study of the coupling impedance of delay systems of the resonator chain type with a positive mutual inductance coefficient as a function of the geometric dimensions. The results of the experimental study of the dispersion characteristics were presented previously [Ya. K. Trokhimenko, et al., *Radiotekhnika*, Khar'kov State University Press, Khar'kov, No 3, 40, 1966] Graphs are presented showing the coupling impedance as a function of the diameter of the drift channel for points of the dispersion characteristic corresponding to the phase shift by  $5\pi/3$ ,  $3\pi/2$ ,  $4\pi/3$  and  $7\pi/6$ . When investigating the dependence of the coupling impedance on the number of slots, a study was made of delay systems with two-slot and single-slot diaphragms characterized by the same shape of the dispersion characteristics in approximately the same pass band. The presented graphs show that the two-slot delay systems have approximately the same coupling impedance as the single-slot ones. The degree of coupling between the cells of the system has a significant effect on the magnitude of the coupling impedance. This relation

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USSR

PRAVDA, V. I., et al., Izvestiya vuzov SSSR, Radioelektronika, Vol XV, No 8, 1972, pp 1037-1041

is also illustrated. The greatest increase in the coupling impedance with a decrease in the parameter  $a$  (an increase in the slot size) is observed for  $\phi = 7\pi/6$ . For  $\phi = 3\pi/2$ , the increase is insignificant. For  $d/\lambda \approx 0.3$  [ $d$  is the length of the drift gap;  $\lambda$  is the period of the system], the coupling impedance has the largest value near the shortwave limit of the operating frequency band of the delay system and the least value of the coupling impedance on the edges of the operating frequency band. The application of symmetric drift tubes with such walls lead to concentration of the electric field in the zone of interaction with the electron beam and significantly increases the coupling impedance in the entire operating frequency band of the delay system. The coupling impedance increases with a decrease in the thickness of the diaphragm [iris]. However, a decrease in thickness of the iris worsens the heat dissipating properties of the delay system.

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LIZ'KO, N. N.

JPRS 55687  
12 APR 1972

UDC 612.316.31-06:612.766.2

CHANGES IN INTESTINAL MICROFLORA DURING MAN'S LONG-TERM CONFINEMENT IN AN ISOLATION CHAMBER

(Article by V. M. Shiley, R. N. Liz'ko, and O. K. Borisov; Moscow, Kozmiche-shays Biologiya i Meditsina, Russian, Vol 6, No 1, pp 78-81, 1972, submitted for publication 2 November 1970)

**Abstract:** This paper gives the results of a study of human intestinal microflora during a one-year medical-engineering experiment. The long-term isolation induces substantial shifts in the composition of intestinal microflora which include a drastic reduction of the population of different microbial groups and even a complete disappearance of certain representatives of microorganisms. Simulations of emergency situations which cause an increased physiological load upon the human body bring about more specific changes in the composition of microflora.

The prolonged confinement of cosmonauts in a pressurized cabin under modified environmental conditions with simultaneous exposure to a number of spaceflight factors (accelerations, ionizing radiations, special diet, restricted mobility, etc.) can lead to unfavorable shifts in the composition of intestinal microflora and a change in its biological properties.

The results of a study of normal intestinal microflora indicate the increased importance of intestinal microflora in body vital functions. Its positive influence is related primarily to the synthesis of vitamins, enzymatic and antagonistic properties (Donaldson; Nili; Zubrycki and Spaulding; Reddy, et al., and others). However, in addition to a useful effect, the constant inhabitants of the intestinal tract under definite conditions can exert an unfavorable influence favoring the development of pathology (L. G. Peretts, 1955; Haerel, and others). However, in the case of exposure of the body in an isolation chamber no adequate study has yet been made of normal intestinal microflora. Only individual studies give information on the change in intestinal microflora in individuals confined to an isolation chamber (Lucky; Bengason and Thomas; Benson; Klaty, et al.; Vargosko, et al.).

USSR

UDC: 517.512.2

LIZORKIN, P. I.

"Multipliers of Fourier Integrals In  $L_p$ ,  $\theta$  Spaces"

Teoremy Vlozheniya i Ikh Prilozheniya [Imbedding Theorems and Their Applications -- Collection of Works], Moscow, Nauka Press, 1970, pp 137-142, (Translated from Referativnyy Zhurnal Matematika, No. 8, 1970, Abstract #8B115, by the author).

Translation: A number of sufficient conditions are formulated under which an operator which is reduced in Fourier transforms to multiplication by a bounded function is continuous in the space  $L_p$  of functions summable to the degree  $p$ . These results are transferred to more general spaces and also to the case of operators acting from  $L_p$  to  $L_q$ .

USSR

UDC 616.12-007-053.1-089.5-06

SERGIYEVSKIY, V. S., TASHPULATOV, A. T., CHERNOV, V. K., NUCMANOV, YE. K., YAVORSKAYA, G. V., ERENBURG, T. A., LIZUNKOVA, L. P., and TSYBANEVA, N. G., Department of Cardiovascular Surgery, Kazakh Institute of Clinical and Experimental Surgery, Ministry of Public Health, Kazakh SSR, Alma-Ata

"Operative Complications During Correction of Congenital Heart Defects Under Conditions of Moderate Hypothermia"

Moscow , Grudnaya Khirurgiya, No 2, 1970, pp 57-62

Abstract: A total of 230 operations were performed using hypothermia at the institute from 1965 to 1969, operations were conducted to correct septal defects, pulmonary and aortic stenosis, tetralogy of Fallot, combined and rare defects. Among the life-threatening complications encountered in the operations were asystole, ventricular fibrillation, aeroembolism of the coronary vessels, loss of blood, atrioventricular and bundle-branch heart block. The causes of the complications are analyzed and suggestions made to prevent them and to control those that occur. With the present level of knowledge, mortality during operations performed under moderate hypothermia should not exceed 1%.

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USSR

UDC 669.018.45-122.4

KAVERINA, S. N., LIZUNOV, V. A., MINAKOV, V. N., and TREFILOV, V. I.,  
Institute of Metal Physics, Academy of Sciences Ukr SSR

"Structural Changes in the Deformation of Molybdenum Alloys"

Kiev, Metallofizika, No 39, 1972, pp 57-65

Abstract: Molybdenum alloys are examined after different modes of thermo-mechanical treatment: high-temperature rolling plus intermediate heatings, and low-temperature rolling plus intermediate anneals. Data are presented for the change in structure which were obtained by methods of optic and electron microscopy, from lattice parameters and mechanical properties of alloys in the deformed state and after annealing in the 1100-2000°C interval. It was shown that the use of low-temperature rolling significantly lowers the ductile-brittle transition temperature, increases the number of bends, and increases the recrystallization temperature. 7 figures, 1 table, 14 bibliographic references.

1/1

Composite Materials

USSR

UDC 620.183:620.17

KIDIN, I. N., LIZUNOV, V. I., and BELYAVSKAYA, V. M., Moscow Institute of Steel and Alloys"

The Role of Structural Components in Hardening Natural Composite Materials"

Moscow, Izvestiya Vysshikh Uchebnykh Zavedeniy, Chernaya Metallurgiya, No 7, 1973, pp 136-140

Abstract: The dependence of the yield point and of the ultimate strength of steel 60 and of steel U8 on the interlaminar distance in sorbite was evaluated. Steel with a fibrous structure possesses a higher hardening factor in deformation than steel with a chaotic disposition of cementite particles. When calculating the strength of a fibrous composite material, not only the strength of the particles of the hardening phase must be accounted for, but also the effect of hardening the matrix at the expense of diminution domains of barrierless motion of dislocations. A good correlation between the calculated and actual strength of the composite results in equal strength of the matrix and iron with the size of cells equal to the interlaminar distance in the steel. Three figures, eight bibliographic references.

1/1

USSR

UDC 669.14.620.181

KIDIN, I. N., LIZUNOV, V. I., MAKSIMOVA, O. V., and BORODINA, YE. K., Moscow Institute of Steel and Alloys

"Production of a Composite Material Based on the Ferrite-Martensitic Structure of Steel 20"

Moscow, Izvestiya Vysshikh Uchebnykh Zavedeniy, Chernaya Metallurgiya, No 1, 1973, pp 134-137

Abstract: The possibility of producing natural composite materials based on the layered ferrite-martensitic structure of steel 20 is analyzed. The method consists in heating steel by direct current transmission ( $v=100$  deg/sec) up to  $750-780^{\circ}\text{C}$  (two-phase region), rolling, and hardening in rollers. After such processing, a low-temperature anneal is carried out. At optimum processing conditions ( $\epsilon=40-50\%$ ,  $t_{\text{anneal}}=250^{\circ}\text{C}$ ), the tensile strength  $\sigma=155-160$  kg/mm<sup>2</sup> and the elongation  $\delta=2-4\%$  at 100% viscous fracture. In this case, the structure consists of a ferritic matrix and sections of annealed martensite ( $H=530-550$ ), oriented along the axis of rolling. The dimensions and the form of martensitic section are determined, as is the volume part of the martensite, which equals  $\sim 50\%$ . Critical values of  $\phi$ ,  $v$ , and  $1/h$  were  $1/2$

USSR

KIDIN, I. N., et al., Izvestiya Vysshikh Uchebnykh Zavedeniy, Chernaya Metallurgiya, No 1, 1973, pp 134-137

calculated; it is demonstrated that the produced material conforms to the requirements of composite materials. Four figures, one formula, seven bibliographic references.

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### Thermomechanical Treatment

USSR

KIDIN, I. N., LIZUNOV, V. I., BELYAVSKAYA, V. M., and YEREMENKO, V. I., Moscow Institute of Steel and Alloys

"Study of the Mechanism of Hardening of Wire by Electrothermomechanical Treatment"

Moscow, IVUZ Chernaya Metallurgiya, No 3, 1971, pp 129-132.

Abstract: The influence of electrothermal and electrothermomechanical treatment on the structure and properties of wire made of type 60 steel was studied. The electrothermomechanical treatment was found to produce a higher tensile strength ( $130 \text{ kg/mm}^2$ ) while retaining a high level of ductility. Electrothermal treatment produced a tensile strength of  $126 \text{ kg/mm}^2$ , while ordinary patenting resulted in a strength of  $117 \text{ kg/mm}^2$ . Electrothermal and electrothermomechanical treatment significantly improve the structure.

1/1

1/2 007 UNCLASSIFIED PROCESSING DATE--09OCT70  
TITLE--STATE SYSTEM OF STANDARDIZATION -U-  
AUTHOR--(02)-TSIBIZOV, N.I., LIZUNOV, YU.E.  
COUNTRY OF INFO--USSR  
SOURCE--STANDARTY I KACHESTVO, 1970, NR 3, PP 3-5  
DATE PUBLISHED-----70  
  
SUBJECT AREAS--BEHAVIORAL AND SOCIAL SCIENCES  
TOPIC TAGS--INDUSTRIAL STANDARD, INDUSTRIAL MANAGEMENT, GOVERNMENT  
ECONOMIC CONTROL  
  
CONTROL MARKING--NO RESTRICTIONS  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRA--1986/1729 STEP NO--UR/0422/70/000/003/0003/0005  
CIRC ACCESSION NO--AP0103493

UNCLASSIFIED

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UNCLASSIFIED

PROCESSING DATE--09OCT70

CIRC ACCESSION NO--AP0103493

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE BASIC REQUIREMENTS OF GOST 1-68 ARE EXPLAINED. THE AUTHORS PRESENT DEFINITIONS OF "STANDARDIZATION" AND "STANDARD", THEY SHOW THE MAJOR TASKS FACING STANDARDIZATION, ANALYZE VARIOUS CATEGORIES OF STANDARDS, AND DISCUSS THEIR FIELDS OF APPLICATION. EXPLAINED IN THE ARTICLE ARE PROCEDURES OF STATE SUPERVISION OVER, AND DEPARTMENTAL CONTROL OF, THE INTRODUCTION OF STANDARDS AND SPECIFICATIONS AND FOLLOWING THEM.

UNCLASSIFIED

1/2 010 UNCLASSIFIED PROCESSING DATE--30OCT70  
TITLE--SELECTIVE TESTING OF SOME ASPECTS OF STANDARD IN PROCESS OF  
EXAMINATION -U-  
AUTHOR--(02)-TSIVIZOV, N.I., LIZUNOV, Y.F.  
COUNTRY OF INFO--USSR  
SOURCE--STANDARTY I KACHESTVO, 1970, NR 5, PP 37-38  
DATE PUBLISHED-----70  
  
SUBJECT AREAS--BEHAVIORAL AND SOCIAL SCIENCES, MECH., IND., CIVIL AND  
MARINE ENGR  
TOPIC TAGS--QUALITY CONTROL, INDUSTRIAL STANDARD, ACCURACY STANDARD  
  
CONTROL MARKING--NO RESTRICTIONS  
  
DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAME--1999/0112 STEP NO--UR/0422/70/000/005/0037/0039  
CIRC ACCESSION NO--AP0122378  
UNCLASSIFIED

2/2 010

UNCLASSIFIED

PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0122378

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE ARTICLE TELLS ABOUT SEQUENTIAL EXAMINATION OF STANDARDS WHICH PERMITS TO REVEAL THEIR DEFECTIVE CHARACTERISTICS, EVEN IF SINGULAR, IN SHORTEST TIME AND WITH LEAST EXPENSES. IT IS PROVED THAT THE PROCESS OF SEARCH CAN BE EFFICIENTLY IMPROVED.

UNCLASSIFIED

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UR 0482

Soviet Inventions Illustrated, Section I Chemical, Derwent, <sup>p-76</sup>

24779 WELD CRACKING TESTING involves remelting the weld by a method where on a square cross-section metal bar cuts are made on each of three edges to a different depth along the full length of the bar, the cuts are welded and then melted. An assessment by comparison establishes the cracking tendency. 17.6.67 as 165396/25-28. K.V.L. MACHINE CONSTRUCTION TECHNOLOGY RES. INST. (1.9.69.) Bul 14/18.4.69. Class 42k. Int.Cl.G 01n. LD

AUTHORS: Lyubavskiy, K. V.; L'kova, Ye. P.; and Kleybanova, Zh. P.  
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